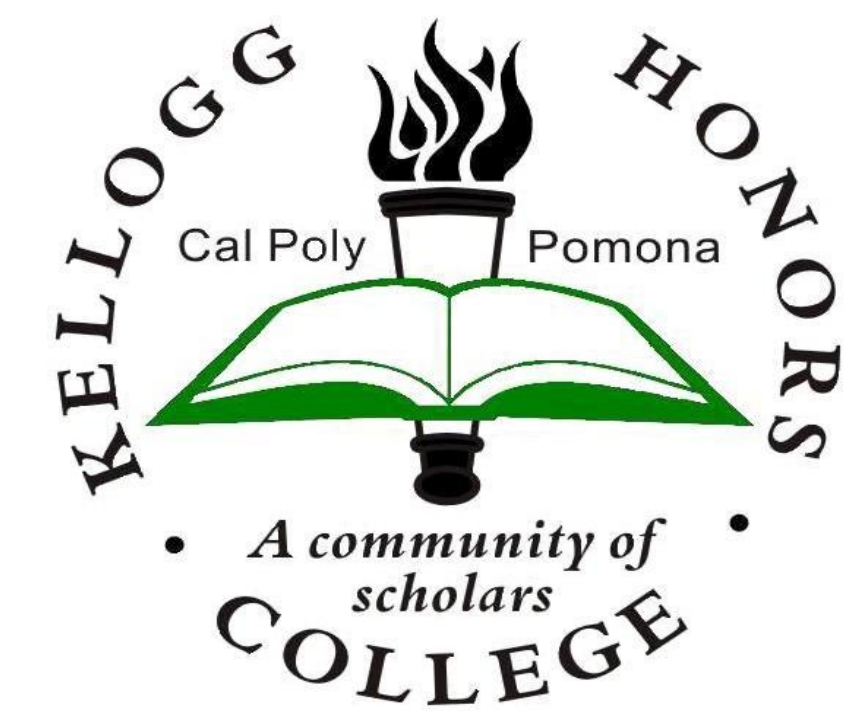


# Effect of iPromptU Application on Cultivating Mindfulness



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## Introduction

Recent research coming from the fields of neuroscience and psychology has revealed strong support for the benefits of mindfulness on subjective well-being and other lifestyle factors (Foureur et al., 2013; Hill & Updegraff, 2012; Fjorback, Arendt, Ornbol, Fink, & Walach, 2011). Mindfulness can be described as the amplification of conscious awareness through moment-to-moment non-judgmental introspection (Allen et al., 2006), and is associated with increased attention and open curiosity.

Rather than being an inherent trait, mindfulness can be thought of as a trainable skill that can be improved through a variety of interventions. However, many such interventions, such as mindfulness meditation, may be inaccessible to the widespread population and impractical for many to implement, often requiring focused guidance by trained professionals. Therefore, this study was intended to determine if a more practical mindfulness technique may be found in the interactive Descriptive Experience Sampling (DES) method, as applied through the use of the free Smartphone application called iPromptU. This method targets skills associated with mindfulness including observing, describing, and non-judgmentally taking note of one's awareness, through targeted questions which the participant answers.

Thus we investigated whether engaging in DES activities at random intervals (via a Smartphone prompt) would have an effect on the participants levels of mindfulness. The control groups consisted of a comparative meditation control group, who participated in mindfulness meditation, and a pure control group, who completed only filler activities.

The results revealed no increase in mindfulness for those that completed the DES activity over a 4-week period; however, there was some limited support that meditation did increase mindfulness as measured by the Langer Mindfulness Scale and self-esteem as measured by the Rosenberg Self-Esteem Scale (RSES).

## Methods

### Participants:

During Phase 1, 38 male and female participants completed the pretest mindfulness measures (see below). Of which, 31 completed the study and returned for Phase 2. The participants were all enrolled students of California Polytechnic State University, Pomona. Specifically, the participants were recruited using the Psychology and Sociology participant pool (SONA systems) and earned credit for their participation. The participants were not selected based on any specific demographics, but all participants were required to own Smartphone devices and be willing to download the Smartphone app. The participants were randomly assigned to one of the three between-participant conditions using random.org.

### Materials:

Both the pre-test (Phase 1) and post-test (Phase 2) were identical and were completed on a laboratory computer using Qualtrics. Specifically, the pre-test and post-test consisted of the following scales: the Mindful Attention and Awareness Scale (MAAS;  $\alpha=.736$ ); the Five Facets Mindfulness Questionnaire (FFMQ;  $\alpha=.804$ ); the Langer Mindfulness Scale (LMS;  $\alpha=.831$ ); the Current Experiences Inventory (CEI;  $\alpha=.837$ ); and the Rosenberg Self-Esteem Scale (RSES;  $\alpha=.857$ ).

The participants used their Smartphone devices to download the iPromptU application and an alarm application, GoodHabitMaker, to alert them to answer the iPromptU questions at a random time throughout the day.

### Procedure:

Upon arrival, participants completed the above mindfulness scales. Next, all participants downloaded the iPromptU app and the GoodHabitMaker app, which was programmed so as to deliver prompts once daily at a random time. They were asked to respond to the prompts as they occurred over a 4-week period.

The questions the participants were prompted to answer varied by condition. The Descriptive Experience Sampling (DES) group ( $n=11$ ) were prompted to answer the following: What is the strongest emotion or feeling you are experiencing right now? What does that emotion make you feel like doing? How might that emotionally driven behavior cause problems? How, if at all, might that emotionally driven behavior be useful? How can you choose more intelligent behavior while experiencing the same emotion?

The comparative control group ( $n=11$ ) performed mindfulness meditation sessions in addition to answering questions through the app. Specifically, they used an online-guided meditation 3-4 times weekly. The iPromptU questions were emotionally-neutral and concerned the meditation session the participants had, as follows: Did you meditate today? How long did you meditate for? At what time of day did you meditate?

The pure control group ( $n=8$ ) answered questions that were emotionally neutral and non-contemplative in nature. Such questions included: What time did you wake up this morning? Have you been physically active? Did you eat breakfast today? Have you or are you intending on purchasing food today?

After 4 weeks of completing their assigned tasks, the participants returned to the psychology lab on campus and completed the post-test before being debriefed.

## Results

As seen in Figure 1, LMS scores slightly declined from Phase 1 to Phase 2 for the DES group and the control group; however, there was an expected increase in LMS scores for the meditation group. A 2 (Phase: 1 and 2)  $\times$  3 (Condition: DES, Meditation, Control) mixed-design analysis of variance revealed that neither the main effect of phase nor the main effect of condition were significant. However, the Phase  $\times$  Condition interaction was significant,  $F(2, 27) = 4.63$ ,  $MSE = 22.41$ ,  $p = .02$ ,  $\eta^2 = .26$ . Follow-up t-tests revealed the difference from Phase 1 to Phase 2 was not significant for the control group and the DES group, but the increase in LMS scores was significant for the meditation condition,  $t(10) = -2.43$ ,  $p = 0.36$ .

As seen in Figure 2, Rosenberg Self-Esteem Scale (RSES) scores were largely similar across the phases for the control and DES conditions. However, RSES scores did decrease (meaning more self-esteem) for those in the mindfulness meditation condition across the phases. A 2 (Phase: 1 and 2)  $\times$  3 (Condition: DES, Meditation, Control) mixed-design analysis of variance revealed none of the effects were significant, including the expected Phase  $\times$  Condition interaction,  $F(2, 27) = 2.37$ ,  $MSE = 13.33$ ,  $p = .11$ ,  $\eta^2 = .15$ .

Finally, there were only small changes across the phases for the other scales and there were no significant differences for any of the other scales.

## Data

Figure 1

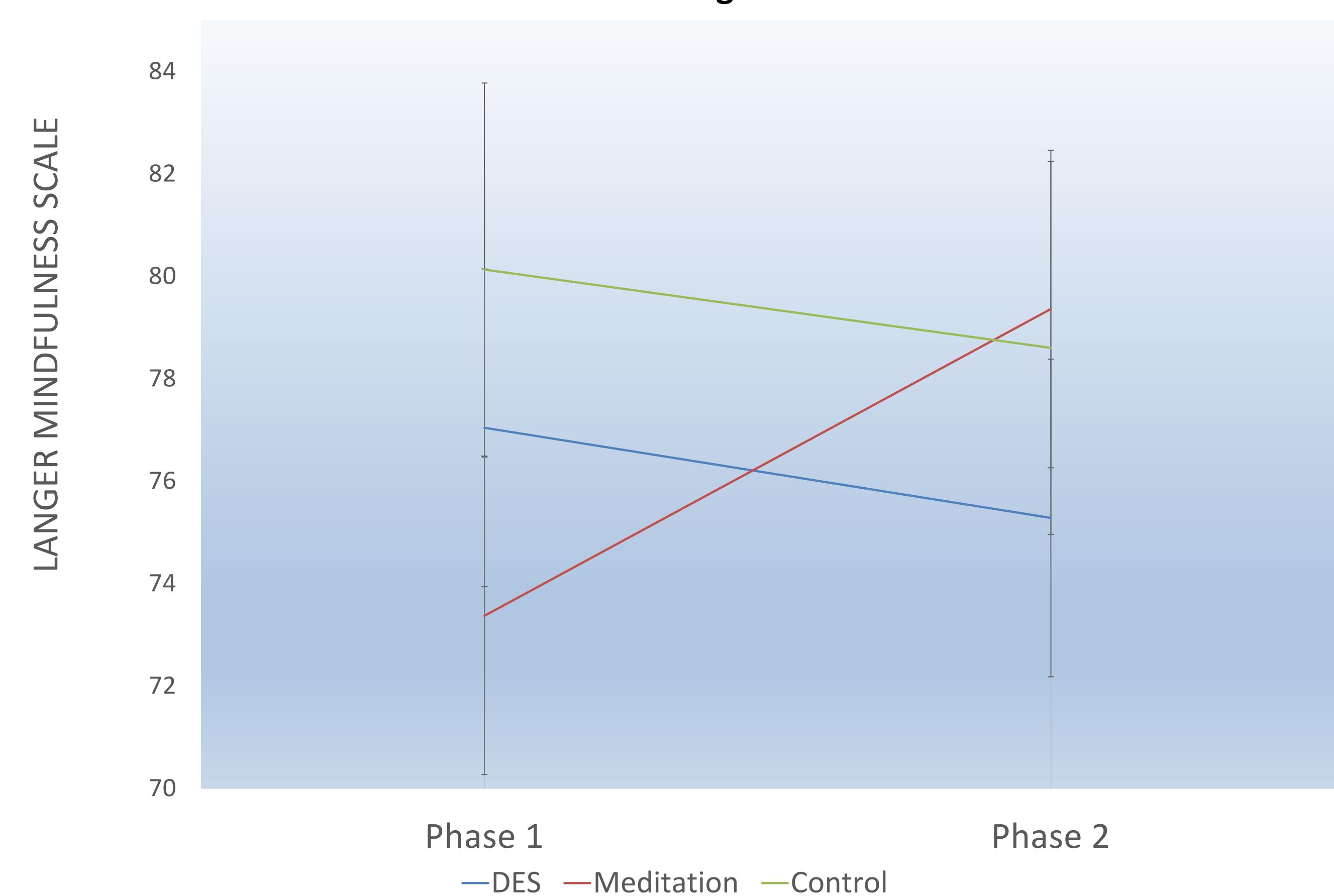
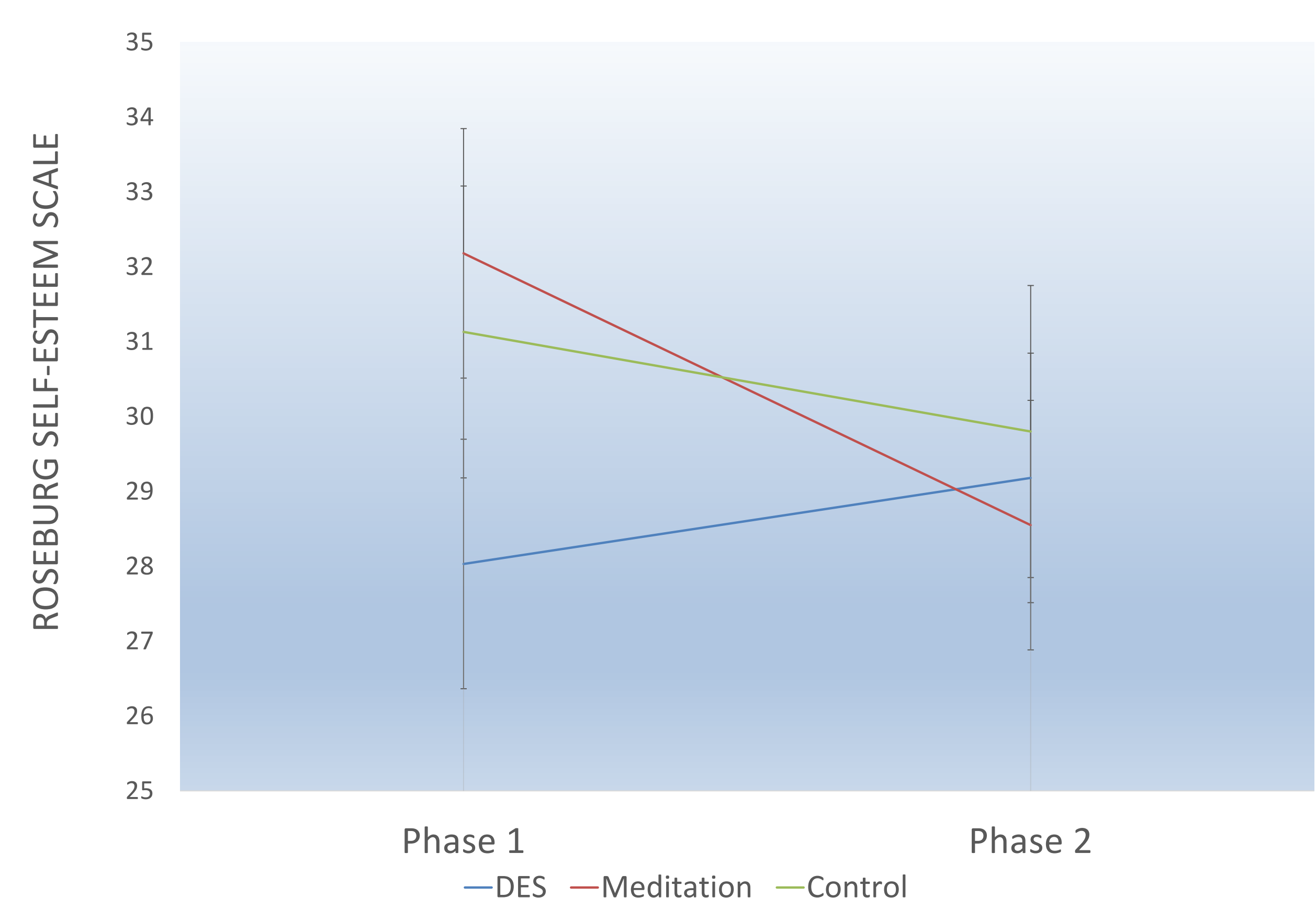


Figure 2



## Discussion

Based on research linking observation, description, and nonjudgmental awareness of mental states to mindfulness (Baer et al. 2008), we expected that using the iPromptU App to complete a four-week DES activity would increase mindfulness at least as much as four weeks of meditation. However, based on the results, it would seem that this treatment did not have an effect on the participants' levels of mindfulness.

However, we did see some limited support that four weeks of meditation, which was guided online through a video, did have a significant increase on the Langer Mindfulness Scale and a smaller (but not significant effect) on the Rosenberg Self-Esteem Scale.

Due to the intervention lasting four weeks, we were only able to recruit a small sample. This lack of statistical power may have led to the failure to find significant effects—especially for meditation on the other mindfulness scales. Augmenting these study characteristics for future research may lead to more insights as to the efficacy these activities could have on cultivating mindfulness.